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PATENT SPECIFICATION



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COMPLETE SPECIFICATION.

Improvements in Wireless Receivers.

We, RADIOAKTIENGESELLSCHAFT D. S. LOEWE, of 10, Wiesenweg, Berlin-Steglitz, Germany, a Company organized under the Laws of Germany, and Dr. 5 PAUL KAPTEYN, of 52, Steinstrasse, Steinstricken, Neubabelsberg, Berlin, Germany, a Citizen of the German Republic, do hereby declare the nature of this invention and in what manner the same is to 10 be performed, to be particularly described and ascertained in and by the following statement:—

The receiver according to the invention is able to be used with slight alteration 15 in the connections, in direct connection with mains of direct or alternating current of various potentials. A rectifying valve provided for alternating current is cut out by a switch when the 20 receiver is used on direct current.

Since receivers of this nature should still operate even in the case of very low supply potentials (for example, 110 volts d.c.), the supply connections above all 25 require to be such that an excessive loss of potential, say of more than 20%, is avoided in the smoothing means. By reasons subsequently explained the usual chokes have to be replaced by ohmic 30 resistances which, consequently, have to be relatively low, i.e. of the order of 1000 ohms, and to obtain the requisite smoothing action by the use of relatively large condensers, say of 6—8 mf. For reasons 35 associated with the cost and weight it is advisable to employ for this purpose electrolytic condensers. When using condensers of this nature, however, there is encountered the disadvantage that consideration requires to be paid to the 40 poling, as the condensers in the case of incorrect poling are quickly destroyed.

This danger exists when employing the receiver in connection with direct current 45 mains, as it is not easily recognized immediately (above all when using indirectly heated, i.e. relatively slowly heated tubes) which poling is correct.

To overcome these difficulties the following steps are taken in accordance with the invention:

1. Upon changing over to direct current care is taken that none of the elec-

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trolytic condensers is able to be directly connected to the mains, but that a resistance of, for example, 2000 ohms, is inserted between the electrolytic condensers remaining in operation and the supply terminals. That is why the smoothing chokes are replaced by ohmic resistances. Experiments have shown that when using a guard resistance of this nature incorrect poling over a relatively long period of time has no detrimental effect on the electrolytic condenser. 55

2. Since in the case of incorrect poling the leakage current through the electrolytic condenser is considerably greater than in correct poling, a small lamp (for example, a suitably dimensioned pocket-lamp bulb) may be connected in series with the electrolytic condenser. This lights in the case of incorrect poling and may be so chosen that it burns out when the incorrect poling is effective for too long a time. 75

3. Since the total current of the receiver is greater in the case of incorrect poling, also the fuse connected in series with the receiver may be so selected that it burns out in the case of incorrect poling over a relatively long period. 80

A connection system according to the invention is shown in the drawing. This is a three-valve system for direct connection with the house-circuit. 85

In the figure 1, 2, 3 are the three valves for receiving and amplifying, and 4 the rectifying valve, 5 is the switch which allows the apparatus to be connected either to the alternating current source 10 or to the direct current-source 11. 9 is the one common lead for both kinds of currents. In changing over, the electrolytic condenser 6 is protected from damage by the protective resistance 8. 7 is a protective resistance, such as a lamp, flashing at a wrong poling, 12 is a smoothing resistance and 13 the by-passing condenser for the first stage. The arrangement 14, 15, 16, 17 serves for producing a suitable, grid bias, 19 is the protective condenser for the pick-up connection. The pick-up is connected to the terminals 20, 21. In the second lead at 21 a resistance 18 is interposed for diminishing hum. 95

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Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that what we claim is:—

- 5 1). A receiver adapted to operate from direct current or alternating current supplies, possibly of different potentials, characterised in that those parts, which 40 might be damaged by incorrect poling upon change over to direct current, are connected with the supply circuit through the medium of a guard resistance.
- 15 2). A receiver according to claim 1, characterised by smoothing circuits containing ohmic resistances being so calculated that the loss in potential does not exceed 20% of the potential available.
- 20 3). A receiver according to claims 1 and 2, characterised by the use of small smoothing resistances, for example of the order of 1000 ohms, in conjunction with large condensers, more particularly electrolytic condensers of, say, 6—8 mf.
- 25 4). A receiver according to any of

claims 1—3, characterised by the connection of a small signal lamp in the lead to one or more electrolytic condensers, acting as guard device which lights in the case 30 of incorrect poling.

5). A receiver according to claim 4, characterised in that the signal lamp is so dimensioned that the same, in the case of incorrect poling taking place over a relatively long period of time, acts as fuse 35 and burns out.

6). A receiver according to any of claims 1—5, characterised by a fuse in one of the supply circuit leads, which 40 burns out in the case of incorrect poling and relatively long over-loading.

7). A receiver substantially as hereinbefore described and as illustrated according to the accompanying drawings. 45

Dated this the 2nd day of August, 1933.
RADIOAKTIENGESELLSCHAFT

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[This Drawing is a reproduction of the Original on a reduced scale.]

